

## CLAIMS

What is claimed is:

1. A stent comprising a  $\text{TiN}_x\text{O}_y$  compound implanted at a depth within at least a region of a surface of the stent.
2. The stent of Claim 1, wherein x is 1 and y is 1 or 2.
3. The stent of Claim 1, wherein the depth of the implanted  $\text{TiN}_x\text{O}_y$  compound is not greater than about 2000 Å from the surface of the stent.
4. The stent of Claim 1, additionally comprising a layer of  $\text{TiN}_x\text{O}_y$  compound deposited on the region of the surface of the stent where the  $\text{TiN}_x\text{O}_y$  compound is implanted.
5. The stent of Claim 4, wherein x is 1 and y is 1 or 2.
6. The stent of Claim 4, wherein the layer of  $\text{TiN}_x\text{O}_y$  compound is not more than about 48,000 Å in thickness.
7. The stent of Claim 1, wherein the stent is made from stainless steel.
8. The stent of Claim 1, wherein the surface is the tissue-contacting surface of the stent.
9. A stent comprising a layer of  $\text{TiN}_x\text{O}_y$  and a layer of Ti, N, or TiN disposed beneath the layer of  $\text{TiN}_x\text{O}_y$ .
10. The stent of Claim 9, wherein a region of the layer of  $\text{TiN}_x\text{O}_y$  is

implanted at a depth within a surface of the stent.

11. A stent comprising a surface and a  $\text{TiN}_x\text{C}_y$  compound deposited on at least a region of the surface of the stent.

12. A stent comprising a surface and a  $\text{TiN}_x\text{C}_y$  compound implanted at a depth within at least region of the surface of the stent.

13. A method of modifying a surface of a stent, comprising implanting a  $\text{TiN}_x\text{O}_y$  compound at a depth within a surface of the stent.

14. The method of Claim 13, wherein x is 1 and y is 1 or 2.

15. The method of Claim 13, additionally comprising forming a layer of a  $\text{TiN}_x\text{O}_y$  compound on the surface of the stent where the  $\text{TiN}_x\text{O}_y$  compound is implanted.

16. The method of Claim 15, wherein x is 1 and y is 1 or 2.

17. The method of Claim 13, wherein the stent is made from stainless steel.

18. The method of Claim 13, wherein prior to the act of implanting the  $\text{TiN}_x\text{O}_y$  compound within the surface of the stent, the method comprises implanting Ti or N within the surface of the stent.

19. A method of modifying a stent surface, comprising implanting Ti, N, or TiN into the surface of the stent and forming a layer of a  $\text{TiN}_x\text{O}_y$  compound over the areas where Ti, N, or TiN has been implanted.

20. A method of modifying a surface of a stent, comprising implanting a  $\text{TiN}_x\text{C}_y$  compound at a depth within a surface of the stent or depositing the compound on the surface of the stent.

A MODIFIED SURFACE FOR AN IMPLANTABLE DEVICE AND A  
METHOD OF PRODUCING THE SAME

Shamim M. Malik  
Avijit Mukherjee

ABSTRACT

Implantable devices, such as stents, having a surface modified with  $\text{TiN}_x\text{O}_y$   
or  $\text{TiN}_x\text{C}_y$  are disclosed.

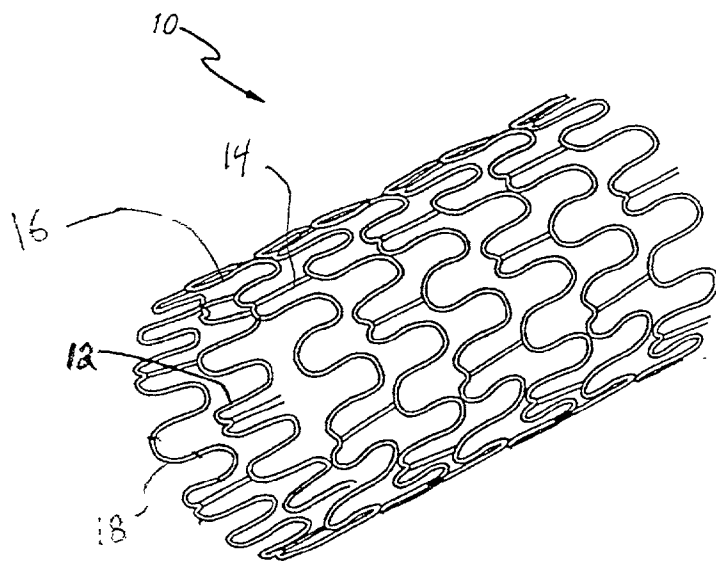


Figure 1

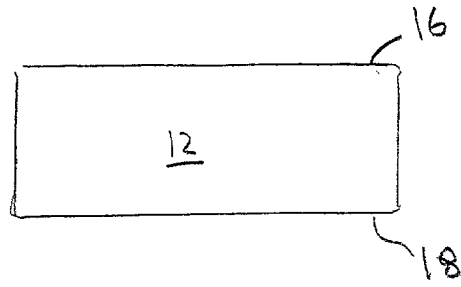


Figure 2A

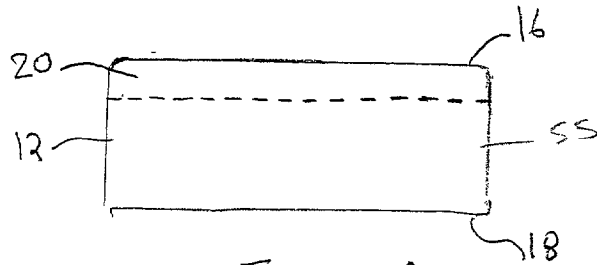


Figure 2B

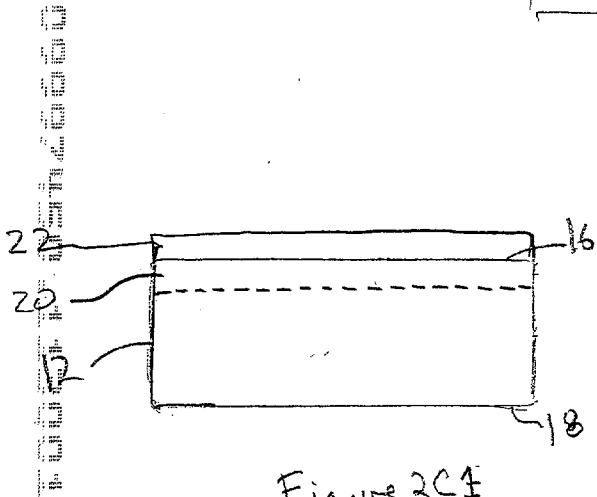


Figure 2C1

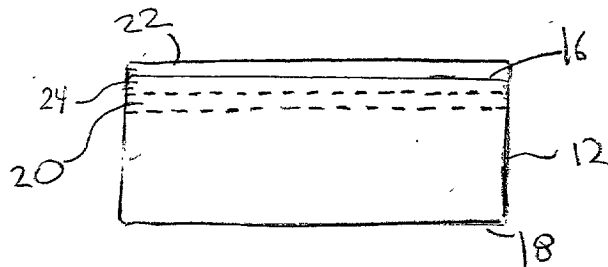


Figure 2C2

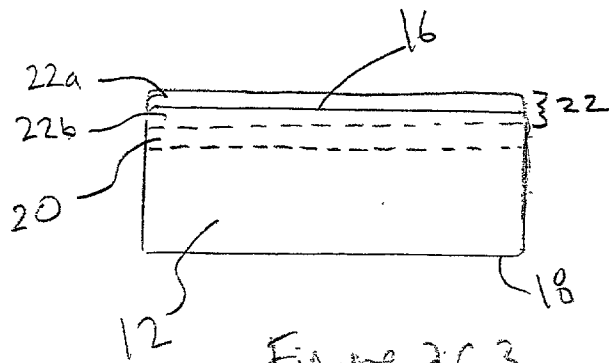


Figure 2C3

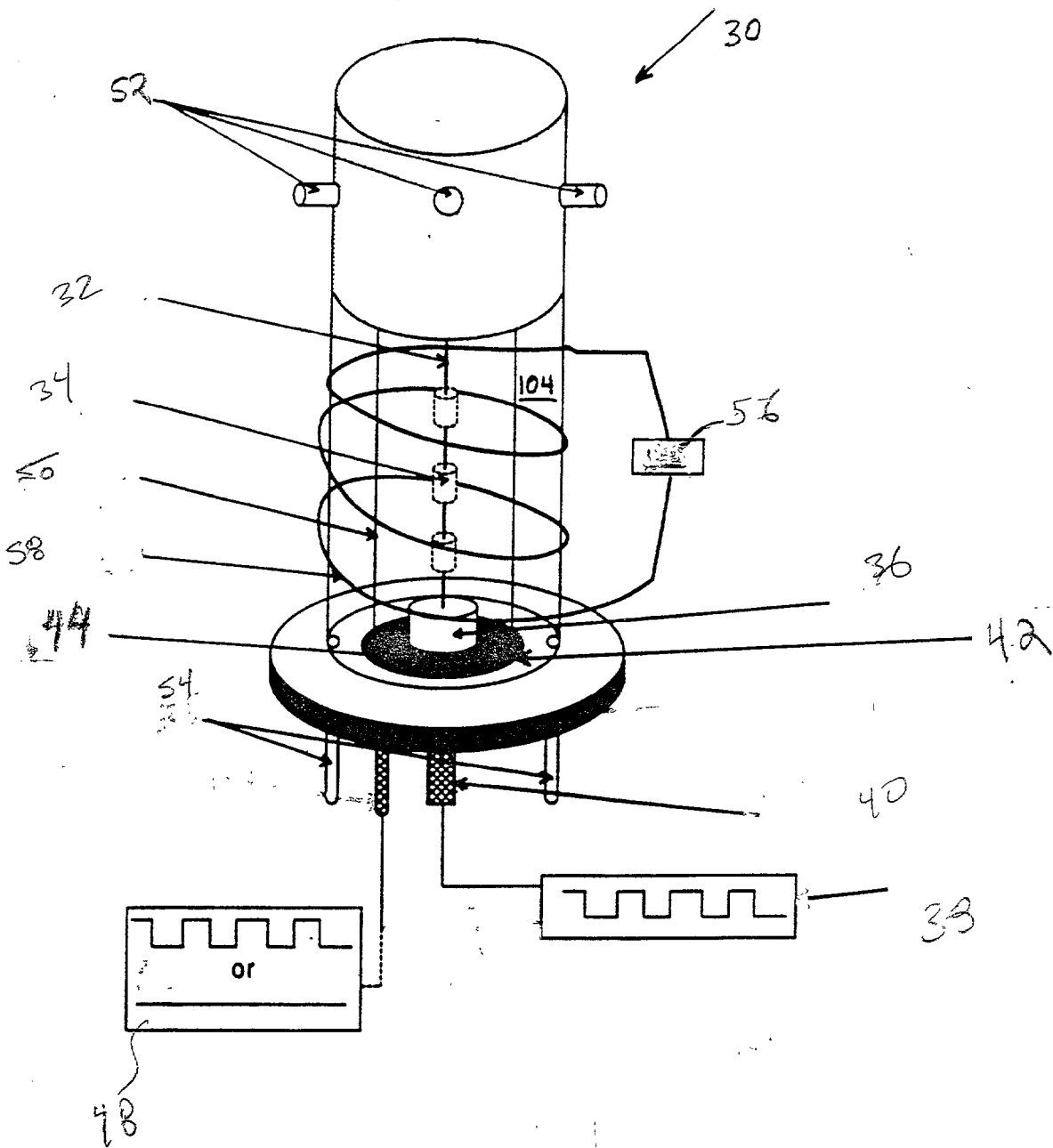


Figure 3